

Claims

1. A method for providing at least one program to a utility of a commodity, the program aimed at managing demand for the commodity, the utility delivering the commodity to at least one customer site, the customer site having a plurality of devices which use the commodity, including the steps of:

defining a program having a subset of the plurality of devices for which usage of the commodity may be managed by activating the program;

delivering the commodity to the subset of devices;

measuring the instantaneous rate at which the commodity is being delivered to the subset of the devices;

sending the instantaneous rate for each device within the subset to the utility;

and,

determining, in real time, a capacity associated with the delivery of the commodity which may be available for management by activating the program.

2. A method, as set forth in claim 1, including the steps of:

activating the program; and,

subsequently measuring at least one of a rate and a change in the rate at which the commodity is being delivered to the subset of the devices.

3. A method, as set forth in claim 2, including the step of determining an actual capacity of the commodity saved by activating of the program.

4. A method, as set forth in claim 3, including the step of providing at least one of an alternate rate and a billing adjustment rebate to at least one customer as a function of the actual capacity managed at the related customer site by the program.

5. A method, as set forth in claim 4, wherein the at least one of an alternative rate and a billing adjustment is also a function of historical usage information.

6. A method, as set forth in claim 2, including the step of verifying management of the devices within the subset of the devices.

7. A method, as set forth in claim 1, wherein the utility delivers the commodity to a plurality of customer sites, each customer site having a plurality of devices and the step of defining the program includes the step of including within the program all devices of a similar type at each customer site.

8. A method, as set forth in claim 1, including the step of allowing a customer to subscribe to the program.

9. A method, as set forth in claim 1, wherein the program is mandatory.

10. A method, as set forth in claim 1, wherein the utility delivers the commodity to a plurality of customer sites, each customer site having a plurality of devices and the step of defining at least one program includes the step of defining a plurality of programs, each program having a respective subset of the devices.

11. A method, as set forth in claim 10, wherein the commodity is delivered to the plurality of customer sites through a distribution network, including the step of determining,

in real time, a capacity available across the distribution network associated with the delivery of the commodity which may be managed by activating the plurality of programs.

12. A method, as set forth in claim 11, including the step of providing a graphical representation of the capacity available across the distribution network.

13. A method, as set forth in claim 12, wherein the graphical representation includes at least one of a meter, a bar chart, a line graph, a geophysical display, and a numeric display.

14. A method, as set forth in claim 11, wherein the distribution network includes a plurality of substations, the method including the step of determining, in real time, a capacity available on each substation, associated with the delivery of the commodity which may be managed by activating the plurality of programs.

15. A method, as set forth in claim 11, wherein the distribution network includes at least one transmission substation and at least one distribution substation associated with each transmission substation, the method including the step of determining, in real time, a capacity available on each substation, associated with the delivery of the commodity which may be managed by activating the plurality of programs.

16. A method, as set forth in claim 15, wherein the distribution network includes at least one circuit associated with each distribution substation, the method including the step of determining in real time, a capacity available on each circuit, associated with the delivery of the commodity which may be managed by activating the plurality of programs.

17. A method, as set forth in claim 16, including the step of displaying a collapsible/expandable tree of the distribution network containing the at least one transmission substation, the at least one distribution substation associated with each transmission substation, and the at least one circuit associated with each distribution substation, wherein selection of one of the substations and circuit in the distribution network displays associated capacity information.

18. A method, as set forth in claim 17, wherein the collapsible/expandable tree is displayed in a utility interface, the method including the step of displaying a list of the programs available in response to selection a portion of the tree, the available programs corresponding to those available programs which correspond to a portion of the distribution network.

19. A method, as set forth in claim 1, wherein the commodity is electrical power.

20. A method, as set forth in claim 1, wherein the commodity is water.

21. A method, as set forth in claim 1, wherein the commodity is one of natural gas and steam.

22. A method, as set forth in claim 1, wherein the step of defining at least one program includes the step of defining a plurality of programs, each program having a respective subset of the devices, the method including the step of providing a search function for identifying at least one program which matches a set of conditions.

23. A method, as set forth in claim 22, wherein the set of conditions includes an available capacity.

24. A method, as set forth in claim 1, including the step of providing a utility interface.

25. A method, as set forth in claim 24, wherein the utility interface is accessible through a web browser.

26. A method, as set forth in claim 1, including the step of automatically activating the program under a predetermined set of conditions.

27. A method, as set forth in claim 26, wherein the predetermined set of conditions includes at least one of a time of day and a day.

28. A method, as set forth in claim 1, including the step of manually activating the program as a function of an actual demand of the commodity.

29. A method, as set forth in claim 1, wherein the program at least one of shifts demand away from a first time period and eliminates the demand

30. A method, as set forth in claim 1, including the step of managing the subset of devices in response to activation of the program.

31. A method, as set forth in claim 30, wherein the step of controlling the subset of devices includes the step of modifying usage of the commodity during a predetermined period of time.

32. A method, as set forth in claim 30, wherein at least one of the devices has an operating setpoint, and wherein the step of controlling the subset of devices includes the step of modifying the setpoint.

33. A method, as set forth in claim 1, including the steps of receiving a supply request and allowing an operator to responsively activate the program.

34. A method, as set forth in claim 33, wherein the program may be activated at least one of immediately and a future point in time.

35. A method, as set forth in claim 33, wherein the supply request includes a request duration, wherein the program may be activated as a function of the request duration.

36. A method, as set forth in claim 1, wherein each device has an associated node, and the method includes the step of downloading to each node, a program schedule containing scheduling information for the program.

37. A method for providing at least one program to a utility of a commodity, the program aimed at managing demand for the commodity, the utility delivering the commodity to at least one customer site, the customer site having a plurality of devices which use the commodity, including the steps of:

defining a program having a subset of the plurality of devices for which usage of the commodity may be managed by activating the program;

delivering the commodity to the subset of devices;

measuring the instantaneous rate at which the commodity is being delivered to the subset of the devices;

sending the instantaneous rate for each device within the subset to the utility;

determining, in real time, a capacity associated with the delivery of the commodity which may be managed by activating the program;

activating the program;

determining an actual rate of consumption of the commodity and a rate of change of consumption induced by activation of the program; and,

providing at least one of an alternative rate and a billing adjustment to at least one customer as a function of the actual capacity managed at the related customer site by the program.

38. A method for providing at least one program to a utility of a commodity, the program aimed at managing demand for the commodity, the utility delivering the commodity to at least one customer site, the customer site having a plurality of devices which use the commodity, including the steps of:

defining a program having a subset of the plurality of devices for which usage of the commodity may be managed by activating the program;

delivering the commodity to the subset of devices;

measuring the instantaneous rate at which the commodity is being delivered to the subset of the devices;

sending the instantaneous rate for each device within the subset to the utility,;

determining, in real time, a capacity associated with the delivery of the commodity which may be managed by activating the program;

activating the program; and,

verifying management of the devices within the subset of the devices.

39. A method for providing at least one program to a utility of electrical power, the program aimed at managing demand for the electrical power, the utility delivering the electrical power to a plurality of customer sites through a distribution network, each customer site having a plurality of devices which use the electrical power, the distribution network



including at least one transmission substation, at least one distribution substation associated with each transmission substation, and at least one circuit associated with each transmission substation, including the steps of:

defining a program having a subset of the plurality of devices for which usage of the electrical power may be managed by activating the program;

delivering the electrical power to the subset of devices;

measuring the instantaneous rate at which the electrical power is being delivered to the subset of the devices;

sending the instantaneous rate for each device within the subset to the utility;

and,

determining, in real time, a capacity available on at least one of the at least one transmission substation, the at least one distribution, and the at least one circuit network associated with the delivery of the commodity which may be managed by activating the program.

40. A method, as set forth in claim 39, including the step of displaying a collapsible/expandable tree of the distribution network containing the at least one transmission substation, the at least one distribution substation associated with each transmission substation, and the at least one circuit associated with each distribution substation, wherein selection of one of the substations and circuit in the distribution network displays associated at least one of capacity and demand information.

41. A method, as set forth in claim 40, wherein the collapsible/expandable tree is displayed in a utility interface, the method including the step of displaying a list of the programs available in response to selection a portion of the tree, the available programs



corresponding to those available programs which correspond to a portion of the distribution network.

42. A system for providing at least one program to a utility of a commodity, the program aimed at managing demand for the commodity, the utility delivering the commodity to at least one customer site, the customer site having a plurality of devices which use the commodity, comprising:

a utility interface, operable by a user, for defining a program having a subset of the plurality of devices for which usage of the commodity may be limited by activating the program;

a distribution network for delivering the commodity to the subset of devices;

a node, coupled to each device, for measuring the instantaneous rate at which the commodity is being delivered to the subset of the devices; and,

a control system coupled to the utility interface, the distribution network, and each node, for controlling delivery of the commodity and determining, in real time, a capacity associated with the delivery of the commodity which may be available by activating the program as a function of the measured instantaneous rate.

43. A system, as set forth in claim 42, the control system being adapted to activate the program and the nodes adapted to subsequently measure the rate at which the commodity is being delivered to the subset of the devices.

44. A system, as set forth in claim 43, the control system for determining at least one of an actual rate of consumption of the commodity and a change in a rate of consumption induced by activating of the program.

45. A system, as set forth in claim 44, wherein the control system determines at least one of an alternative rate and a billing adjustment to at least one customer as a function of the actual capacity managed at the related customer site by the program.

46. A system, as set forth in claim 45, wherein the at least one of an alternative rate and a billing adjustment is also a function of historical usage information.

47. A system, as set forth in claim 43, wherein the control system verifies management of the devices within the subset of the devices.

48. A system, as set forth in claim 42, wherein the utility delivers the commodity to a plurality of customer sites, each customer site having a plurality of devices and the utility interface allows the user to define a plurality of programs, each program having a respective subset of the devices.

49. A system, as set forth in claim 48, wherein the commodity is delivered to the plurality of customer sites through a distribution network, wherein the control system determines, in real time, a capacity available across the distribution network associated with the delivery of the commodity which may be managed by activating the plurality of programs.

50. A system, as set forth in claim 49, wherein the utility interface includes a graphical representation of the capacity available across the distribution network.

51. A system, as set forth in claim 50, wherein the graphical representation includes at least one of a meter, a bar chart, a line graph, a geophysical map, and a numerical display

52. A system, as set forth in claim 49, wherein the distribution network includes a plurality of substations, the control system being adapted to determine in real time, a capacity available on each substation, associated with the delivery of the commodity which may be managed by activating the plurality of programs.

53. A system, as set forth in claim 49, wherein the distribution network includes at least one transmission substation and at least one distribution substation associated with each transmission substation, the control system being adapted to determine, in real time, a capacity available on each substation, associated with the delivery of the commodity which may be managed by activating the plurality of programs.

54. A system, as set forth in claim 53, wherein the distribution network includes at least one circuit associated with each distribution substation, the control system, being adapted to determine in real time, a capacity available on each circuit, associated with the delivery of the commodity which may be managed by activating the plurality of programs.

55. A system, as set forth in claim 54, the utility interface being adapted to display a collapsible/expandable tree of the distribution network containing the at least one transmission substation, the at least one distribution substation associated with each transmission substation, and the at least one circuit associated with each distribution substation, wherein selection of one of the substations and circuit in the distribution network displays associated capacity information related to capacity that can be managed by the programs

56. A system, as set forth in claim 55, wherein the utility interface displays a list of the programs available in response to selection a portion of the tree, the available programs

corresponding to those available programs which correspond to a portion of the distribution network.

57. A system, as set forth in claim 42, wherein the commodity is electrical power.
58. A system, as set forth in claim 42, wherein the commodity is water.
59. A system, as set forth in claim 42, wherein the commodity is one of gas and steam.
60. A system, as set forth in claim 42, wherein the control system defines at least one program includes the step of defining a plurality of programs, each program having a respective subset of the devices, and provides a search function for identifying at one program which matches a set of predetermined conditions.
61. A system, as set forth in claim 60, wherein the set of predetermined conditions includes an available capacity that can be managed by the programs
62. A system, as set forth in claim 42, wherein the utility interface is accessible through a web browser.
63. A system, as set forth in claim 42, wherein the program shifts demand away and eliminates demand from a first time period.
64. A system, as set forth in claim 42, wherein the control system controls the subset of devices in response to activation of the program.

65. A system, as set forth in claim 64, wherein the control system controls the subset of devices by at least one of limiting and increasing usage of the commodity during a predetermined period of time.

66. A system, as set forth in claim 65, wherein at least one of the devices has an operating setpoint, and wherein the control system controls the at least one of the devices by modifying the setpoint.

67. A system, as set forth in claim 42, wherein each device has an associated node, and the method includes the step of downloading to each node, a program schedule containing scheduling information for the program.

68. A system for providing at least one program to a utility of a commodity, the program aimed at managing demand for the commodity, the utility delivering the commodity to at least one customer site, the customer site having a plurality of devices which use the commodity, including the steps of:

defining a program having a subset of the plurality of devices for which usage of the commodity may be managed by activating the program;

delivering the commodity to the subset of devices;

measuring the instantaneous rate at which the commodity is being delivered to the subset of the devices;

sending the instantaneous rate for each device within the subset to the utility;

determining, in real time, a capacity associated with the delivery of the commodity which may be managed by activating the program;

activating the program;

determining at least one of an actual rate of consumption of the commodity and a charge in a rate of consumption by activating of the program; and,

providing a at least one of an alternative rate and a billing adjustment to at least one customer as a function of the actual capacity modified at the related customer site by the program.

69. A system for providing at least one program to a utility of electrical power, the program aimed at managing demand for the electrical power, the utility delivering the electrical power to a plurality of customer sites, each customer site having a plurality of devices which use the electrical power, comprising:

a utility interface, operable by a user, for defining a program having a subset of the plurality of devices for which usage of the commodity may be managed by activating the program;

a distribution network for delivering the commodity to the subset of devices, the distribution network including at least one transmission substation, at least one distribution substation associated with each transmission substation, and at least one circuit associated with each transmission substation;

a node, coupled to each device, for measuring the instantaneous rate at which the commodity is being delivered to the subset of the devices; and,

a control system coupled to the utility interface, the distribution network, and each node, for controlling delivery of the commodity and determining, in real time, a capacity available on at least one of the at least one transmission substation, the at least one

distribution, and the at least one circuit network associated with the delivery of the commodity which may be managed by activating the program.

70. A system, as set forth in claim 69, wherein the utility interface displays a collapsible/expandable tree of the distribution network containing the at least one transmission substation, the at least one distribution substation associated with each transmission substation, and the at least one circuit associated with each distribution substation, wherein selection of one of the substations and circuit in the distribution network displays associated capacity information.

71. A system, as set forth in claim 70, wherein the utility interface displays a list of the programs available in response to selection a portion of the tree, the available programs corresponding to those available programs which correspond to a portion of the distribution network.